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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/809,259	03/16/2001	Masaru Honda	Q63548	5310

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EXAMINER

QI, ZHI QIANG

ART UNIT PAPER NUMBER

2871

DATE MAILED: 03/14/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/809,259

Applicant(s)

HONDA ET AL.

Examiner

Mike Qi

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 24 January 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-24 is/are pending in the application.
- 4a) Of the above claim(s) 7, 12, 13 and 17-24 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-6, 8-11 and 14-16 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 4, 8.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-2 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 6,327,088 (Iwata et al) in view of US 6,412,969 (Toriwara et al).

Claim 1, Iwata discloses (col.5, line 55 – col.7, line 3; col.13, line 40 – col.17, line 25; Fig.1) that the light diffusing (scattering) layer (18) comprising a light transmissive resin (scattering resin) (16) containing a light transmissive diffusing material (colorless transparent spherical particles) (14), wherein:

- the transparent resin film (scattering resin), ordinarily, having a thickness of 25-1000 μm , and the thickness would affect the transmittance, displaying image must have more than 85% of transmittance, so as to obtaining a desired thickness such as 1-100 μm ;
- the haze value of the light diffusing (scattering) film is 0.7 (70%) or less, so that the resulting panel gives an excellent display quality;
- the difference between the refractive index Δn ($n(R) - n(F)$) of light transmittance resin (16) (a refractive index $n(R)$ of the colorless transparent resin) and the refractive index of light transmissive diffusing material (14) (a

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refractive index n (F) of the colorless transparent spherical particles) satisfy:

$$0.01 \leq \Delta n \leq 0.5$$

- the average particle diameter d of the diffusing material (the average particle size Φ of the colorless transparent spherical particles) satisfies: $0.1 \mu\text{m} \leq d \leq 5 \mu\text{m}$;
- the weight parts of the beads (a content of the colorless transparent spherical particles) such as the "example 1" is 1.11 and the weight parts of the resin (the colorless transparent resin) is 100.

Although Iwata does not expressly disclose exactly same as the limitations as claimed such as the difference between a refractive index n (R) of the colorless transparent resin and a refractive index n (F) of the colorless transparent spherical particles satisfy: $0.00 \leq \Delta n \leq 0.05$, but Iwata discloses a range of $0.01 \leq \Delta n \leq 0.5$, that the one skilled in the art would based on the Iwata's disclosure to find more precise range, so as to obtain a clear and less blurred display and uniform independent of visual angles (see col.6, lines 14-46).

Although Iwata does not expressly disclose exactly same as the limitations as claimed such as the haze H_z satisfying: $50\% \leq H_z \leq 90\%$, but Iwata disclosed (col.14, lines 16-24) that the haze value of the light diffusing (scattering) film is 0.7 (70%) or less, so that the resulting panel gives an excellent display quality. Torihara also discloses (col.14, lines 48-63) that a variety of product for the diffusing sheet (scattering sheet) can be used such as manufactured by Tsujiden Co., Ltd, in which the

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haze is about 78%, 79%, 81% or 82% so as to prevent unwanted decrease in the luminance on the liquid crystal panel.

Therefore, it would have been obvious to those skilled in the art at the time the invention was made to form the scattering sheet comprising a colorless transparent resin and colorless transparent spherical particles as claimed in claim 1 for achieving a clear and less blurred display and uniform independent of visual angles.

Claim 2, Iwata discloses (col.13, line 40 – col.15, line 2) that the weight part of the diffusing material (the content of the colorless transparent spherical particles) such as the "example 8" is 30 and the weight part of the resin (the colorless transparent resin) is 100.

3. Claims 3-4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Iwata and Torihara as applied to claims 1-2 above, and further in view of JP 7-216328 (Shuji et al).

Claims 3-4, Shuji discloses (abstracts) that using acrylic pressure-sensitive adhesive resin mixing with resin particles to form a light-diffusing composition (light scattering sheet) so as to obtain a surface illuminant of high luminance. The refractive index is a property of the material such as the colorless transparent resin using a material of acrylic pressure-sensitive adhesive, so that the refractive index $n(R)$ is about 1.4 to 1.5 that would be the property of the material of the acrylic pressure-sensitive adhesive resin. Therefore, it would have been obvious to those skilled in the art at the time the invention was made to use acrylic pressure-sensitive adhesive resin

as the colorless transparent resin as claimed in claims 3-4 for achieving a surface illuminant of high luminance.

4. Claims 5-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Iwata and Torihara as applied to claims 1-2 above, and further in view of US 6,348,960 (Etori et al).

Claim 5, Etori discloses (col.3, line 66 – col.4, line 5) that as the spherical microparticles, the organic microparticles such as silicone resin are preferably used, because spherical shape is more easily obtained with the silicone resin material. Therefore, it would have been obvious to those skilled in the art at the time the invention was made to use silicone resin as the material of the colorless transparent particles as claimed in claim 5 for obtaining the spherical shape more easily.

Claim 6, the phase retardation value is determined from the refractive index difference and the thickness of the material, so that the certain scattering sheet would have a certain retardation value, and that would be the property of the material of the scattering sheet. Therefore, the phase retardation value of the scattering sheet would be determined by the certain material, and that would have been at least obvious.

5. Claims 8-11 and 14-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Iwata, Torihara, Shuji and Etori as applied to claims 1-6 above, and further in view of US 6,456,347 (Motomura et al).

Claims 8-11 and 14-16, Motomura discloses (col.7, lines 28 – 48; Fig.6) that a structure of a laminated sheet wherein:

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- a phase retardation film (12) (conventionally, the phase retardation film can be a quarter-wave film or a half-wave film) as the stretched resin sheet is laminated on the scattering sheet (35);
- the polarizer plate (13) and the phase retardation plate (12) are laminated on the scattering sheet (35) in layers;
- the laminated sheet (13, 12, 35) is laminated on the front of a liquid crystal cell (11);
- the polarizer plate (15) is laminated on the back of the liquid crystal cell (11), and a light guide plate (16) (a backlighting device) is placed on the back of the polarizer plate (15);
- a phase retardation plate (14) is laminated with the polarizer plate (15) on the back of the liquid crystal cell (11).

Motomura indicates (col.7, lines 41 – 48) that such structure allows the liquid crystal device having a greater viewing angle and a greater viewable area for image display, because the light is scattered by light scattering layer.

Therefore, it would have been obvious to those skilled in the art at the time the invention was made to use scattering layer as claimed in the claims 8-11 and 14-16 for achieving a greater viewing angle.

Conclusion


6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

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7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mike Qi whose telephone number is (703) 308-6213.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

Mike Qi
February 28, 2003


TOANTON
PRIMARY EXAMINER